How to

Identify Introduced Basswood Thrips

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The introduced basswood thrips, *Thrips calcaratus*, is a recently recognized defoliator of American basswood in the Lake States. American basswood is a common understory tree throughout the northeastern United States, as well as an important, though often scattered, component of the forest overstory. Over the past several years, basswood stands in northern forests have suffered moderate to severe defoliation. Damage can resemble early spring frost injury, but examination of the newly expanding leaves reveals small, active insects.

Defoliation of basswood trees caused by introduced basswood thrips.

Symptoms

Damage to basswood from the introduced basswood thrips is characterized by bud drop in the early spring or a stunted, shredded appearance of expanding leaves. On fully expanded leaves, feeding damage appears as a silvering of the leaf cuticle. Repeated defoliation leads to thinned crowns and branch dieback, and eventual reduction in radial growth. Tree mortality has been rare.

Thrips damage to newly expanding Basswood leaves.

Thrips damage to fully expanded Basswood leaves.

Undamaged basswood leaves expanding from an overwintering bud.

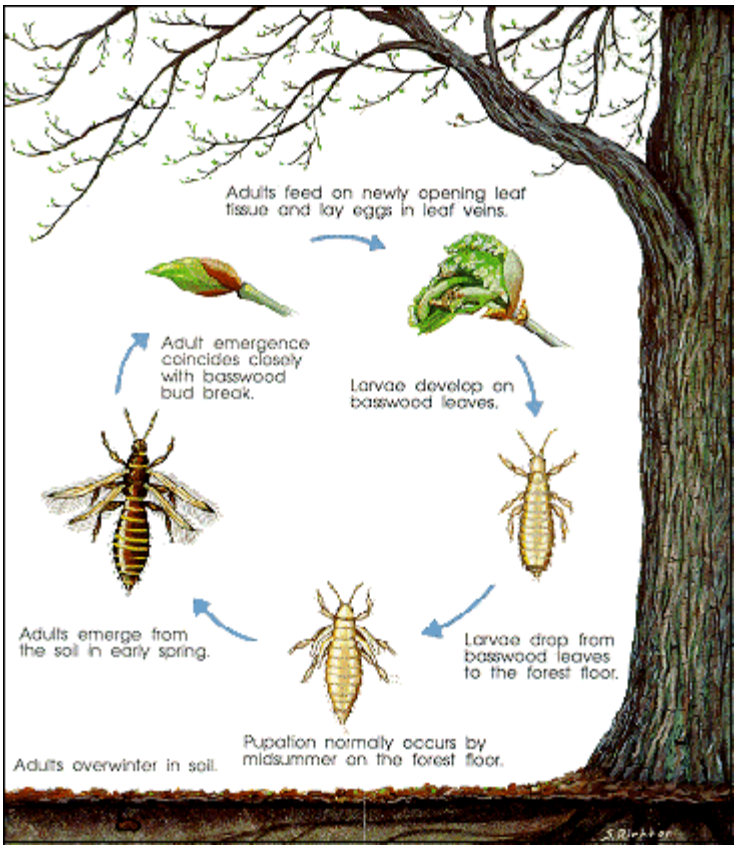
Life History

The introduced basswood thrips is of European origin. Because it has not caused damage in its native European range, its basic biology, host range and life history are not well known.

Preliminary research suggests that egg production and thrips development are optimal at cooler temperatures. Adult females emerge from overwintering sites in the soil as basswood buds break in early spring. Adults feed on the newly opened leaves, rupturing individual plant cells. Oviposition (egg laying) occurs within the lower leaf veins of expanding leaves. Reproduction is parthenogenetic (females do not mate). No males have been recorded in North America.

Larvae appear in mid- to late May, and feed on leaf tissue throughout their development. At least two larval instars are recognized. Fully developed larvae drop from the foliage, move into the litter and soil, and pupate. Adults emerge from pupae later in the summer, move into the soil, and diapause until the following spring.

In addition to the introduced basswood thrips, the pear thrips, *Taeniothrips inconsequens*, may potentially defoliate deciduous forests of the Lake States. Other thrips that may be present on basswood include the native basswood thrips, *Neahydatothrips tiliae*, which is not known to cause damage, and the beneficial predatory thrips, *Haplothnps mali*.


Adults feed on newly opening leaf tissue and lay eggs in leaf veins.
Larvae develop on basswood leaves.
Larvae drop from basswood leaves to the forest floor.
Pupation normally occurs by midsummer on the forest floor.
Adults emerge from the soil in early spring.
Adult emergence coincides closely with basswood bud break.
Adults overwinter in soil.

Identification

Adult female introduced basswood thrips.

Based on the feathery appearance of their wings, thrips can be recognized with a hand lens. However, because of their small size (less than 5 mm), positive identification of the introduced basswood thrips requires microscopic examination.

Introduced basswood thrips adults have 7-segmented antennae and a pre-apical fore tarsal claw. Larvae have 17 to 18 projections on the posterior abdominal comb In contrast, adult pear thrips have 8-segmented antennae and an apical fore tarsal claw. Larval pear thrips have only 7 to 8 projections on the posterior abdominal comb. Both the native basswood thrips, which is white with red ocelli, and the predatory thrips, which is large and black, are easily distinguished from the basswood thrips.

Knowledge of the basic biology of the introduced basswood thrips, as well as its host range and impact of repeated defoliation, will be required in order to make sound resource management decisions.

Pupa of introduced basswood thrips.

References

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Raffa, K. F. 1991. Biology and impact of *Thrips calcaratus* Uzel in the Great Lakes region. Pages 317-324, in B. L. Parker, M. Skinner and T. Lewis (eds.). Towards Understanding Thysanoptera. USDA For. Serv. Gen. Tech. Rep. NE-147.

Authors

Lynne K. Rieske
Department of Entomology
University of Wisconsin - Madison

Steven A. Katovich
Forest Health Protection
USDA Forest Service
St. Paul, MN

Kenneth F. Raffa
Department of Entomology
University of Wisconsin - Madison